

WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTERS PATENT
OF THE UNITED STATES IS:

1. An electrophotographic image forming apparatus comprising:
 - 5 at least one image forming unit comprising:
 - an electrophotographic photoreceptor comprising:
 - an electroconductive substrate;
 - 10 a charge generation layer disposed over the electroconductive substrate; and
 - a charge transport layer disposed over the charge generation layer,
 - 15 a charger for charging the electrophotographic photoreceptor;
 - an irradiator for irradiating the electrophotographic photoreceptor to form an electrostatic latent image thereon;
 - 20 an image developer for developing the electrostatic latent image with a developer comprising a toner to form a toner image on the electrophotographic photoreceptor; and
 - 25 a transferer for transferring the toner image onto a transfer sheet while applying an electrical current of not less than 65 μ A to the electrophotographic photoreceptor, wherein the charge generation layer comprises titanylphthalocyanine crystals having a CuK α 1.542 \AA X-ray diffraction spectrum comprising plural diffraction peaks, wherein a maximum diffraction peak is observed at a Bragg (2 θ) angle of 27.2 $^{\circ}$; main peaks are observed at 9.4 $^{\circ}$, 9.6 $^{\circ}$ and

24.0°; and a minimum diffraction peak is observed at 7.3°; and no diffraction peak is observed at an angle greater than 7.3° and less than 9.4°, wherein said angles may vary by $\pm 0.2^\circ$ and the minimum interval where no peak is observed between required 5 peaks at 7.3 and 9.4 is 2.0 degrees absolute or more.

2. The electrophotographic image forming apparatus of Claim 1, wherein the electrical current is controlled by a constant current controller.

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3. The electrophotographic image forming apparatus of Claim 1, further comprising:

feedback means for returning a bypass current flow in the transferer to an electrical source; and

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a current measurer for controlling the transfer current by measuring a difference between a current measured thereby and an output current from the electrical source.

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4. The electrophotographic image forming apparatus of

Claim 1, wherein no diffraction peak is observed at 26.3°.

5. The electrophotographic image forming apparatus of Claim 1, wherein the titanylphthalocyanine crystals have an average primary particle diameter of less than 0.3 μm .

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6. The electrophotographic image forming apparatus of Claim 1, wherein the charge generation layer is coated with a

dispersion liquid comprising the titanylphthalocyanine crystals, and the titanylphthalocyanine crystals have a volume-average particle diameter of not greater than 0.3 μm , and wherein the dispersion liquid is dispersed until a standard deviation of the volume-average particle diameter becomes not greater than 0.2 μm and the dispersion liquid is then filtered with a filter having an effective pore diameter of not greater than 3 μm .

10 7. The electrophotographic image forming apparatus of Claim 1, wherein the titanylphthalocyanine crystals are formed by a process comprising:

15 subjecting a titanylphthalocyanine, which is either amorphous or low-crystalline, and which has a maximum $\text{CuK}\alpha$ 1.542 \AA diffraction peak having a half width not less than 1° at a Bragg (2θ) angle of from 7.0 to $7.5^\circ \pm 0.2^\circ$ and an average primary particle diameter of not greater than 0.1 μm , to crystal conversion with an organic solvent in the presence of water; and

20 separating the titanylphthalocyanine from the organic solvent before the titanylphthalocyanine crystals grow to a size where the titanylphthalocyanine crystals have an average primary particle diameter of greater than 0.3 μm .

25 8. The electrophotographic image forming apparatus of Claim 1, wherein the charge transport layer comprises a polycarbonate having a triarylamine structure in the main chain

and/or the side chain.

9. The electrophotographic image forming apparatus of
Claim 1, wherein the electrophotographic photoreceptor further
5 comprises a protection layer disposed over the charge transport
layer.

10. The electrophotographic image forming apparatus of
Claim 9, wherein the protection layer comprises an inorganic
10 pigment and/or a metal oxide, and the inorganic pigment and metal
oxide have a resistivity of not less than $10^{10} \Omega \cdot \text{cm}$.

11. The electrophotographic image forming apparatus of
Claim 10, wherein the metal oxide is selected from the group
15 consisting of alumina, titania and silica.

12. The electrophotographic image forming apparatus of
Claim 10, wherein the metal oxide is α -alumina.

20 13. The electrophotographic image forming apparatus of
Claim 9, wherein the protection layer further comprises a polymer
charge transport material.

25 14. The electrophotographic image forming apparatus of
Claim 1, wherein the charge transport layer is formed with a
non-halide solvent.

15. The electrophotographic image forming apparatus of
Claim 14, wherein the non-halide solvent is selected from the
group consisting of cyclic ethers and aromatic hydrocarbons.

5 16. The electrophotographic image forming apparatus of
Claim 1, wherein an oxide film is formed on the electroconductive
substrate by anodizing.

10 17. The electrophotographic image forming apparatus of
Claim 1, comprising a plurality of the image forming units.

15 18. The electrophotographic image forming apparatus of
Claim 1, wherein the charger charges the electrophotographic
photoreceptor while contacting the electrophotographic
photoreceptor.

20 19. The electrophotographic image forming apparatus of
Claim 1, wherein the charger charges the electrophotographic
photoreceptor while being located close thereto and a gap
therebetween is not greater than 200 μm .

25 20. The electrophotographic image forming apparatus of
Claim 1, wherein the charger applies a DC voltage overlapped
with an AC voltage to the electrophotographic photoreceptor.

21. An electrophotographic photoreceptor comprising:
an electroconductive substrate;

a charge generation layer disposed over the electroconductive substrate; and

a charge transport layer disposed over the charge generation layer,

5 wherein the charge generation layer comprises titanylphthalocyanine crystals having a CuK α 1.542 \AA X-ray diffraction spectrum comprising plural diffraction peaks, wherein a maximum diffraction peak is observed at a Bragg (2 θ) angle of 27.2°; main peaks are observed at 9.4°, 9.6° and 10 24.0°; and a minimum diffraction peak is observed at 7.3°; and no diffraction peak is observed at an angle greater than 7.3° and less than 9.4°, wherein said angles may vary by $\pm 0.2^\circ$ and the minimum interval where no peak is observed between required peaks at 7.3 and 9.4 is 2.0 degrees absolute or more.

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22. The electrophotographic photoreceptor of Claim 21, wherein no diffraction peak is observed at 26.3°.

23. The electrophotographic photoreceptor of Claim 21, 20 wherein the titanylphthalocyanine crystals have an average primary particle diameter of less than 0.3 μm .

24. The electrophotographic photoreceptor of Claim 21, wherein the charge generation layer is coated with a dispersion 25 liquid comprising the titanylphthalocyanine crystals, and the titanylphthalocyanine crystals have a volume-average particle diameter not greater than 0.3 μm , and wherein the dispersion

liquid is dispersed until a standard deviation of the volume-average particle diameter becomes not greater than 0.2 μm and the dispersion liquid is then filtered with a filter having an effective pore diameter of not greater than 3 μm .

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25. The electrophotographic photoreceptor of Claim 21, wherein the titanylphthalocyanine crystal is formed by a process comprising:

subjecting a titanylphthalocyanine, which is either
10 amorphous or low-crystalline, and which has a maximum $\text{CuK}\alpha$ 1.542 \AA diffraction peak having a half width not less than 1° at a Bragg (2θ) angle of from 7.0 to $7.5^\circ \pm 0.2^\circ$ and an average primary particle diameter not greater than 0.1 μm , to crystal conversion with an organic solvent in the presence of water; and

15 separating the titanylphthalocyanine from the organic solvent before the titanylphthalocyanine crystals grow to a size where the titanylphthalocyanine crystals have an average primary particle diameter of greater than 0.3 μm .

20 26. The electrophotographic photoreceptor of Claim 21, wherein the charge transport layer comprises a polycarbonate having a triarylamine structure in the main chain and/or the side chain.

25 27. The electrophotographic photoreceptor of Claim 21, further comprising a protection layer disposed over the charge transport layer.

28. The electrophotographic photoreceptor of Claim 21,
wherein the protection layer comprises an inorganic pigment
and/or a metal oxide, and the inorganic pigment and metal oxide
5 have a resistivity of not less than $10^{10} \Omega \cdot \text{cm}$.

29. The electrophotographic photoreceptor of Claim 28,
wherein the metal oxide is selected from the group consisting
of alumina, titania and silica.

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30. The electrophotographic photoreceptor of Claim 28,
wherein the metal oxide is α -alumina.

31. The electrophotographic photoreceptor of Claim 21,
15 wherein the protection layer further comprises a polymer charge
transport material.

32. The electrophotographic photoreceptor of Claim 21,
wherein the charge transport layer is formed with a non-halide
20 solvent.

33. The electrophotographic photoreceptor of Claim 32,
wherein the non-halide solvent is selected from the group
consisting of cyclic ethers and aromatic hydrocarbons.

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34. The electrophotographic photoreceptor of Claim 21,
wherein an oxide film is formed on the electroconductive

substrate by anodizing.

35. The electrophotographic image forming apparatus of
Claim 1, further comprising a detachable cartridge comprising
5 a photoreceptor and a member selected from the group consisting
of chargers, irradiators, image developers, cleaners, and
combinations thereof.